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Publication Brief for Resource Managers

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Managing a Subsidized Predator Population: Reducing Common Raven Predation on Young Desert Tortoises

A subsidized predator is one that benefits from resources inadvertently provided by human activities. One such predator, the common raven, is the focus of a recent publication in the journal *Environmental Management* by USGS scientist Dr. William I. Boarman. Implications of raven overabundance and management strategies to reduce raven numbers and their negative effects are discussed.

Because human-provided resources are more stable and predictable than those in a natural environment, animals that subsist on them are able to increase in numbers and expand their range, much to the detriment of their competitors and the species they prey upon. In the Mojave Desert, common ravens have benefited from human-provided resources to increase in population size by more than 1,000 percent in the past 25 years.

Perhaps the most significant effect of raven increases is their impact on recovery of desert tortoises, a federally threatened species. Evidence that ravens prey on juvenile desert tortoises of less than about 4 inches long comes from a small number of direct observations and strong circumstantial evidence, such as tortoise shells found beneath active raven nests and perch sites.

A review of existing scientific literature yields recommendations that fall into three categories: (1) managing raven populations by reducing access to anthropogenic resources; (2) removing offending ravens or birds in specially-targeted tortoise management zones; and (3) continuing research on raven ecology, raven behavior, and methods of reducing raven predation on tortoises.

Management Implications:

- Raven populations may be reduced by controlling access to anthropogenic resources or using means to discourage nesting activity or nesting success.
- Incidences of raven predation on juvenile tortoises may be mitigated by removing ravens that are known offenders (as evidenced by the presence of tortoise shells beneath nests or perches); tortoise management zones can be created in which ravens would be removed.
- Continued research is recommended to gain a better understanding of raven ecology and behavior, as well as to learn new strategies of reducing raven predation on tortoises.

In addition, the author recommends approaching the problem within an adaptive management framework: management efforts should first be employed as scientific experiments, with replicates and controls, to yield an unbiased assessment of their effectiveness.

Boarman, W. I. 2003. Managing a subsidized predator population: reducing common raven predation on desert tortoises. Environmental Management 32:205-217.